Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 6/21/11 at 9:00 a.m.

Objective: Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project and the State Water Project on salmonids and green sturgeon. DOSS will coordinate the work of other technical teams. DOSS notes and advice can be found at: http://www.swr.noaa.gov/ocap/doss.htm

DWR: Mike Ford, Angela Llaban, Cynthia LeDoux-Bloom, Edmund Yu
FWS: Nick Hindman
NMFS: Barbara Rocco, Bruce Oppenheim, Barb Byrne, Garwin Yip
Reclamation: Stacey Smith, Thuy Washburn, John Hannon
DFG: Dan Kratville, Robert Vincik, **EPA**, **SWRCB:** not present

Action Items:

1) **FWS (Brandes) and Reclamation (Israel)** will discuss the issue of data reporting protocols and develop a plan to make the data reports more consistent. However, neither were available for an update. **Carry to the next call 9/27/11**

2) **DOSS** will consider the DCC gate closure plan and provide advice by fall 2011.

After some discussion about DOSS' role in helping draft the DCC gate closure plan, it was decided that the group would check in will Joe Johnson, DFG, in the fall for an update. The Mokelumne River Partnership was not seeking DOSS advice on their proposal, but wanted to give everyone advance notice. If DOSS' advice or help is requested after September (action is for October), the group will discuss the issues further after the summer hiatus.

Agenda

1) Fish monitoring data
2) Current operations
3) Action items
4) Subgroup report on green sturgeon (WOMT request)
5) Reports for annual review

Fish Monitoring: The following table presents the fish monitoring data from 6/13 to 6/20/11. For additional info: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm

Location	Chipps Is. Midwater Trawl	Sacramento Kodiak Trawl	Mossdale Kodiak Trawl	Beach Seines	Knights Landing RST	Tisdale Weir RST	Moulton Weir RST
Sample Date	6/13, 15, 17	6/14, 16	6/13	6/12–6/16	6/13, 15, 17, 20	6/13, 15, 17, 20	N/A
Total Catch	**265**	**0**	**758**	**4,823**	**0**	**2**	
FR	196		80	67		2	
LFR							
WR							

SR			1				
(Ad-clips)	69		1	36			
DS							
LFS							
SPTL			676	4,720			
SH (ad-clip)							
SH (wild)							
W.Temp. (avg. °F)	65.8	63.5	62.6	66.4	69.8	64.4	
Flows (avg. cfs)					12,274	12,300	
Turbidity (avg. NTU)					16.6	14.5	
FR/SR Avg. CPUE					0	0.08	
WR/LFR Avg. CPUE					0	0	

Key: FR = Fall run; LFR = Late-fall run; SR = Spring run; WR = Winter run; SH = Steelhead; DS = Delta smelt; LFS = Longfin smelt; SPTL = Splittail, CPUE = catch per unit of effort, ACT = acoustical tag

Tisdale: Upstream few Chinook were caught, 1 on 6/13 and 1 on 6/20.

Knights Landing: Last week of monitoring. DFG may stop a few days early because of the lack of any fish.

Salvage and Loss at the Delta Fish Facilities

Chinook salmon 6/13–6/20/11:

Loss*	CVP	SWP
Winter-run	0	0
Spring-run	34	0
Fall-run	1,133	4,039
Late fall-run	0	0

*non-clipped Chinook

There was a 50% reduction in fall-run Chinook loss at SWP since last week. CVP loss was similar to last week. Both projects saw a decline in the number of spring-run sized Chinook salvaged. No delta smelt were lost. The cumulative total for the year is 51, all were from the CVP; no larval delta smelt and no longfin were salvaged. Splittail salvage was 171,208 at SWP and 713,700 at CVP. The combined seasonal total is 7,988,600. There were no sturgeon salvaged at either facility; the year-to-date total is 12 for white sturgeon and 50 for green sturgeon.

Steelhead:
CVP: 8 hatchery steelhead and 4 non-clipped were salvaged.
SWP: 4 hatchery steelhead and 0 non-clipped were salvaged.
Total YTD: The combined expanded salvage is 676 for non-clipped steelhead.

Coded Wire Tags (CWT)
The majority of the recent tag recoveries have been identified as from the Merced R. Hatchery. Release information from the other hatcheries is not available until the end of the month. There were 163 unread tags. DOSS will continue to monitor the CWT recoveries and update the annual salvage reports at the end of the year (October). Angela received an email from Jonathan Speegle, FWS, that 5 of the missing tags from May had been found and they were not winter-run Chinook. There has been no change in the number of CWT for the spring-run-size surrogate releases, and none of the hatchery winter run have been reported this year.

At the request of NMFS a new tracking system for CWTs is being implemented at the fish facilities that will require people to sign for the tags and check what they are receiving. This should eliminate some of the problems that we had this year pertaining to lost CWTs.

Loss Density (6/13-6/19/11) Older juvenile Chinook loss density was zero for the week.

SWP & CVP WILD STEELHEAD LOSS & LOSS DENSITY
06/13/2011 through 06/19/2011

Date	WILD STEELHEAD LOSS* (# fish)			Combined wild steelhead loss density (fish/TAF)
	SWP	CVP	Combined	
6/13/2011	0.00	0.00	0.00	0.00
6/14/2011	0.00	0.00	0.00	0.00
6/15/2011	0.00	0.00	0.00	0.00
6/16/2011	0.00	2.72	2.72	0.14
6/17/2011	0.00	0.00	0.00	0.00
6/18/2011	0.00	0.00	0.00	0.00
6/19/2011	0.00	0.00	0.00	0.00

DWR-DES 6/20/2011
Preliminary, subject to revision
*SWP loss = salvage * 4.33, CVP loss = salvage * 0.68

One non-clipped steelhead was observed at CVP on 6/16 for a loss density of 0.14. On 6/20, 2 non-clipped steelhead were observed at SWP and 1 at CVP. SWP has reduced sampling to 5-minute counts due to large numbers of splittail. The combined steelhead loss density on 6/20 was 10.70/TAF.

Operations (June 21, 2011)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	6,680	Jones Pumping Plant	3,000
Reservoir releases			
Feather - Oroville	8,500	American - Nimbus	12,000
		Sacramento - Keswick	11,000
		Stanislaus - Goodwin	2,000
Reservoir Storage (TAF)			
San Luis (SWP)	944	San Luis (CVP)	907

Oroville	3,515	Shasta	4,436
		Folsom	913
		New Melones	2,227
Delta Operations			
DCC	Closed	Sacramento River at Freeport	42,598
Outflow Index (cfs)	42,400	San Joaquin River	9,916
Total Delta Inflow	56,208	OMR (daily)	
Water Temperature (°F)	71.4	OMR 5 day	-4,668
X2 (km)	NR	OMR 14 day	-4,009
E/I	16.1%		

Neither the SWP nor CVP is filling San Luis Reservoir; storage is holding steady. SWP demands have increased significantly.

San Joaquin River flows at Vernalis flows are predicted to increase this week due to higher releases from Friant Dam. Some reservoirs are increasing and others are decreasing their releases. Vernalis flows are expected to increase by about 500 to 1,000 cfs within the next few days.

Oroville will decrease to 6,500 cfs tomorrow (6/22), but will go down in increments of 500 cfs about every 2 hours. The change is being implemented to conserve water. A 2,500 cfs pulse flow is being put down the low flow channel (typically at 600 cfs year round) to attract spring-run Chinook to the Fish hatchery ladder.

DOSS subgroup report on green sturgeon (see attached subgroup notes)
WOMT requested last week (6/14/11) for DOSS to convene a green sturgeon subgroup to consider any new information (*e.g.*, this year's wet hydrology and any new biological information) that pertain to the incidental take limits at the CVP and SWP exports pumps.

The DOSS group decided to pass on the recommendation to WOMT without any advice since this is not a real-time operational scenario. NMFS will need to review and agree to this proposal and will check with their legal counsel to see whether the take limit can be modified. NMFS is not prepared to come up with any conclusion yet about whether the proposal is accepted. Modifying the incidental take limit is beyond the scope of the DOSS team and may require a letter from Reclamation. DOSS is still waiting for DNA identification of the 4 sturgeon that were salvaged at the CVP a few weeks ago. They were identified by biologists at the fish facilities and confirmed by Reclamation biologists at Red Bluff, so DOSS is fairly certain that they are green sturgeon.

There was a discussion about whether using the average was appropriate because salvage numbers could be higher or lower during wet years (range 108-204); the average does not capture the extremes, which makes it a difficult situation to assess. WOMT also requested the salvage data be reported for each of the 6 wet years that were considered for the take limit.

The subgroup also considered the average size of green sturgeon salvaged at the pumps, which is about 330 mm annually, and about three times the size of the 4 green sturgeon observed this last weekend at the CVP. There is no specific action required in the NMFS BiOp for green sturgeon once the incidental take limit is reached. DOSS discussed whether there should be an action that

is triggered when 50% of the take limit is reached. NMFS would have to look at any trigger exceedances and consider what action to take.

Green sturgeon are expected to benefit from the protective actions that have already been taken this year to provide better conditions in the Delta for salmonids. The BiOp states (page 777) incidental take "*should be reassessed at every NMFS status review (every 5 years) and adjusted as new information becomes available*"; however, it is unknown when the next status review will take place. The change recommended by the subgroup reflects new information that indicates greater numbers of juvenile green sturgeon this year than in previous years. The number of juveniles is expected to increase over the summer as July and August are historically the peak times for green sturgeon at the salvage facilities.

The DOSS agreed that the subgroup's report should include minor editing and be sent to WOMT today (6/21) (see attached) and also that we check on NMFS' input. DOSS also considered whether it was appropriate to use the highest year of combined salvage reported in 2006, however, there was no agreement. There will have to be a lot of discussion within NMFS and legal counsel on Section 7 to justify an increase in take limit.

There was a question about whether there are any protective measures for sturgeon now other than those that benefit salmonids. Removing Red Bluff Diversion Dam was the most significant RPA action that protected green sturgeon and probably led to higher numbers of adults getting upstream and spawning this year. Therefore, one would expect the number of juvenile green sturgeon would increase as a result of the actions upstream. DOSS agreed to continue monitoring green sturgeon salvage data and update WOMT if needed over the summer.

CVPIA(b)2 Action to protect Fall-Run Chinook from the San Joaquin River
This action is ending on 6/22. CVP export pumping will increase on 6/23 to 4,200 cfs. The action was to hold CVP exports at 3,000 cfs for 14 days, or until juvenile Chinook salmon numbers decreased significantly. Several agency biologists met yesterday (6/20) to discuss the effects of this action. The salvage numbers have declined and, with the rising water temperatures in the Delta, they thought it was not necessary to request that the b2 action be extended. It is evident that the Chinook salvage numbers are dropping off, especially at SWP. CVP salvage has either stayed the same or decreased slightly. There have only been a few listed steelhead salvaged.

Annual Report
DOSS will communicate through emails on the annual report efforts during the summer break.

CWT Data
The DOSS request to have CWT data in one location was discussed at the 5-agency meeting on 5/17/11. The 5-agencies would like more details about what is and is not needed (*e.g.,* whether DOSS needs data on adult spawners that made it back to hatcheries). Does DOSS need CWT data only at the pumps, at both facilities, or at other locations as well? This was an ongoing action (real-time data reporting) that DWR was going to report back to DOSS on in October. DOSS will continue to update the data needs document with more specific information that the 5-agencies requested and revise the data needs document submitted to DWR and DFG earlier.

The hatcheries provide tag codes to the Stockton lab as they are releasing the fish. Tag codes from each hatchery are not reported on a real-time timeframe. It normally takes a few months to get the release data. The majority of hatcheries won't release the complete set of data until all fish have been released. It would help if they could at least provide the beginning and ending tag numbers. DOSS needs the release codes as soon as the fish are released. There might be a way to voice that concern through some of the technical teams. DOSS has not yet been involved in the fish facility meetings dealing with real-time data reporting. The hatcheries are disconnected from salvage reporting at the pumps so they would most likely require separate notification requests.

DOSS advice to WOMT and NMFS: There was no operational advice this week, however, DOSS agreed to provide and update on the subgroup green sturgeon rationale.

Next Meeting: Conference call on Tuesday, 9/27/11, 9:00 a.m.

Attached notes and rationale from subgroup on green sturgeon Conf. call 6/17/11

Purpose: The Water Operations Management Team (WOMT) on 6/14/11 requested that the Delta Operations for Salmonids and Sturgeon (DOSS) re-assess the incidental take limit for green sturgeon at the CVP/SWP export pumps in light of this year's atypical hydrologic conditions. The NMFS 2009 biological opinion (BiOp) allows for a change in incidental take if new information becomes available:

"As the Proposed Action is implemented in the future, the green sturgeon population is expected to increase to varying degrees, resulting in an increase in incidental take. Therefore, incidental take should be reassessed at every NMFS status review (i.e., every 5 years) and adjusted as new information becomes available." (p.777)

DOSS formed a technical subgroup to consider the request from WOMT. The subgroup was made up of agency biologists: Alicia Seesholtz DWR, Josh Israel USBR, Marty Gingras and Dan Kratville DFG, Bruce Oppenheim and Jeff Stuart NMFS, and Bill Poytress USFWS, with expertise in recent green sturgeon monitoring studies both in the Delta and upstream at Red Bluff Diversion Dam (RBDD).

Objective: To assess whether the current incidental take limit of 74 salvaged green sturgeon at both the CVP and SWP should be adjusted in light of this year's wet year conditions and any new information regarding the current year's population of green sturgeon.

Biological Rationale: The technical subgroup reviewed the historical salvage record at the Delta fish facilities and rotary screw trap data on the Sacramento River below spawning locations above Red Bluff. The subgroup decided to use the same methodology used by NMFS in the 2009 BiOp to assess incidental take of green sturgeon at the export pumps. This involved using an average based on salvage figures in 6 wet years (*i.e.*, 1995 to 1999 and 2006) from the same data used in the NMFS BiOp rather than just an average of the last 15 years (Table 13-6 p.775, NMFS 2009). The subgroup considered this to be more representative of the anticipated salvage for this year (a wet year) for the following reasons:

1) This is an extremely long-lived species with a high fecundity rate. Therefore, the right conditions (like this year) combined with a strong spawning run can produce high years of juvenile abundance like in 1995 and 2006.
2) Wet year conditions[1] have created high flow conditions that are conducive to green sturgeon spawning both by attracting greater numbers of adults and by dispersing spawners into new areas. Therefore, more juveniles are likely to be observed at the fish salvage facilities this year.
3) A greater number of acoustically tagged adult green sturgeon were observed in the Sacramento River this year, as well as 42 adult green sturgeon observed during fish rescues at the Yolo Bypass and Sutter Bypasses (*i.e.*, Fremont Weir and Tisdale Weir).
4) Evidence of spawning areas was discovered for the first time this year on the Feather River (*i.e.*, green sturgeon eggs documented at Thermalito Afterbay outlet pool) and 4-5 adult green sturgeon were observed downstream of Daguerre Point Dam on the Yuba River (but no spawning surveys were conducted). These areas are likely used intermittently under high flow conditions. This may lead to greater numbers of adults spawning overall.
5) Other pertinent information from the San Joaquin River: White sturgeon eggs (a similar species) were discovered in the San Joaquin River in April of 2011 and green sturgeon were reported by anglers caught in the San Joaquin River. This could mean suitable spawning habitat exists in the San Joaquin Basin for green sturgeon, which is closer to the delta pumping facilities.
6) Regulatory protection: this was the first year that green sturgeon were fully protected on the spawning grounds due to implementing DFG fishing restrictions and NMFS BiOp actions (*i.e.*, RBDD gates were open during the majority of the adult migration and spawning period).
7) From sturgeon life history biology, sturgeon tend to survive the millennia due to unusually strong years classes of production under infrequent highly favorable conditions. Conditions this year appear to be highly favorable. The highest annual catch of juveniles by USFWS in traps from RBDD spawning areas was 1,358 in 1995 (*i.e.*, 16 years ago). Assuming that some of the progeny of the 1995 brood are entering their first year(s) of maturity[2], the number of spawners this year may be the highest in decades. Catch at RBDD this year by FWS as of 6/14/2011 is a record-high 1,551 fish.

Recommendation: Due to the rationale described above, the subgroup concluded that this year's juvenile abundance appears exceptionally high compared to the last 15 years. Since the current incidental take is based on an average of the previous 15 years of salvage data, which included multiple years with no salvage and numerous year's when salvage was low, the subgroup determined that the incidental take should be changed to reflect salvage typifying a wet year pattern, similar to this year. Using the average green sturgeon salvaged in wet years (1995-1999, and 2006), the incidental take in the form of combined expanded salvage should be changed from 74 to 128 this year. If the combined expanded salvage reaches 102 (80% of the take limit), the subgroup will reconvene. The subgroup also recommended genetic confirmation of species identity, especially for juveniles < 150 mm.

1. CDEC water year classification: http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST

2. Nakamoto, *et al*. 1995, and Van Eenennaam *et al.* 2006, female green sturgeon typically spawn at 13 to 27 years old when sexually mature.
3. Salvage data from Table 13-6 p.775, NMFS 2009

Table 13-6. Combined CVP/SWP salvage and loss by ESA-lised species, hatchery and wild fish combined from 1993-2009 (source: CDFG database)

Green Sturgeon only (wet years highlighted)

Year	Salvage
1993	
1994	
1995	125
1996	108
1997	113
1998	112
1999	108
2000	21
2001	15
2002	84
2003	18
2004	0
2005	16
2006	204
2007	185
2008	8
2008	0
Total	1,117
average	74
Wet year average	128